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## **MODIFIED MOVE SEQUENCE RECOMMENDATION ON MULTI-SOURCE BIG SOCIAL MEDIA**

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### **ABSTRACT**

*Now a day, traveling recommendation is important for user who is the plan for travel. There are many existing techniques which are used for travel recommendation. In this paper explain a personalized travel sequence suggestion system using travelogues and users contributed photos with metadata of this photo by comparing existing different technique. It recommends personalized users travel interest and recommend a sequence of travel interest instead of an individual point of interest. The existing system cannot complete the requirement i.e. personalized and sequential recommendation together. To solve the problem of providing personalized and sequential travel package recommendation, a topical package model is created using social media data in which automatically mine user travel interest with another attribute like time, cost, and season of traveling. The proposed system uses the travelogues and photos of social media which map each user and routes description to the topical package area to induce user topical package model and route topical package model. To suggest personalized POI sequence, first famous routes are stratified as per the similarity between user package and route package. Then high stratified routes are more optimized by using social similar users travel records for more accuracy.*

**KEYWORDS:** *Travel recommendation, Geo-tagged photos, Social media, traveling*

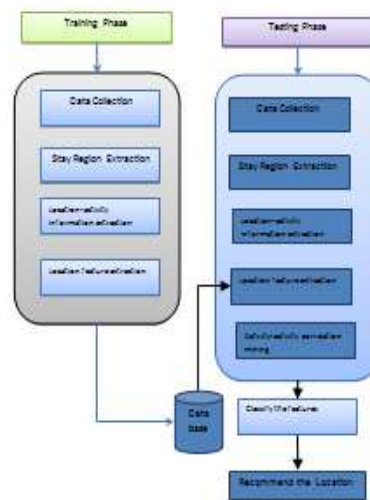
### **INTRODUCTION**

In day to day life, people are interested in traveling and searching for the different tourist location for travel planning in which they are interested. Social media has come out continuous needs for automatic travel recommendation. This becomes an important problem in research and industry. Social media offers great opportunities to address many challenging problems, like GPS estimation and travel recommendation. Travelogue websites offer rich descriptions about landmarks and traveling experience written by users. These data are not only useful for reliable POIs i.e. points of interest, travel routes but give an opportunity to recommend personalized travel POIs and routes based on user's interest. Existing studies on travel recommendation use the different types of social media data, GPS trajectory, check-in-data, geo tag and blogs which are used for mining famous

travel POIS and routes [2][4]. The existing system for general travel route planning cannot well meet user's personal requirements. Personalized recommendation of travel system recommends the POIs and routes by mining user's travel history. Location-based collaborative filtering is the most famous method for the recommendation. In this collaborative filtering method, social similar users are mapped based on the location co-occurrence of previously visited POIs. And then POIs are ranked according similar users travel history. There are two problems in automatic travel recommendation when we compare existing travel recommendation approach. First, the recommended POIs should be personalized to user interest since different users may prefer different types of POIs. Second, it is important to recommend a sequential travel route that is a sequence of POIs rather than individual POI. Existing system on travel recommendation has not well solved the two problems. The first problem, most of the travel recommendation works only focused on user topical interest mining without considering other attributes like consumption capability of the user. And for the second problem, existing studies focused more on famous route mining but not considering user travel interest [1]. To solve the challenges sequential and personalized recommendation of travel location for the user, the new system proposes Topical Package Model method which automatically mines user travel interest from two types of social media data, different user-contributed photos and travelogues. For the first problem, it considers user's topical interest with the attribute like consumption capability and preference of visiting time of user and season. It is difficult to measure the similarity directly between user and route, proposed system build a topical package model and then map both user's and route's textual descriptions to the topical package model to get user topical package model (user package) and route package model (route package) using topical package space[1]. Comparing with existing recommendation system for traveling with this recommendation system is more suited for travel planning for users.

## METHODS

### SYSTEM ARCHITECTURE



Our system consists of 6 parts, including data inputs, stay region extraction, location-activity information extraction, location feature extraction, activity-activity correlation mining and collaborative location and activity recommendations. In the first 5 parts, we model the data and extract knowledge as inputs to train a recommendation system. This process can be performed off-line. In real-time (for part 6), the users can access the recommender through internet using laptops/PCs or smart-phones, and submit the query (i.e. activity or location names). Our system will then return a ranking list of locations or activities given the activity or location query.

### MODULES

- **Data Acquisition**
- **Stay region extraction**
- **Location-activity information extraction**
- **Location feature extraction**
- **Activity-activity correlation mining**
- **Collaborative location and activity recommendations**

#### *Data Acquisition*

In this module is used to the users' GPS trajectories with some comments, our system also exploits various information sources, including Point-of-Interest (POI) category database and World Wide Web, to alleviate the data sparsity problem that occurs when there are few comments to get reliable statistics of the location activity relations.

### *Stay Region Extraction*

As the stay points sometimes may refer to some common locations, we extract stay regions by clustering the stay points and use them for location recommendations. Notice that in practice, the recommended locations are supposed to have limited region sizes, so we take this constraint into consideration and propose a grid-based clustering algorithm to extract the stay regions.

### *Location-Activity Information Extraction*

In this module is used to the available user comments to the GPS trajectories, we can get the statistics about what kinds of activities the users performed on some location, and how often they performed these activities. By organizing this statistics' data in a matrix form, we can have a location-activity matrix, with rows as locations and columns as activities. An entry in the matrix denotes the frequency for the users to perform some activity on some location.. Note that, due to the limited amount of comments, the obtained location-activity matrix is quite sparse. Our ultimate objective is to appropriately fill all the missing entries in that matrix, so that we can rank all the entries for collaborative location and activity recommendation.

### *Location Feature Extraction*

We exploit the location features with the help of POI category database. The database is based on the city yellow pages, and it can provide us the knowledge that what kinds of POIs we have in an area. For example, by query the POI category database with some location area, we can know how many restaurants (and theaters, museums, etc.) exist in this area. This helps us to get some sense of this location's functionalities, so that we can use them as features for better recommendations. Similarly, by organizing the data in a matrix form, we can have a location-feature matrix, with rows as locations and columns as features. Each entry of the matrix denotes some feature value on that location.

### *Activity-Activity Correlation Mining*

In this module is used to exploit the World Wide Web, to get the knowledge about the activity correlations. With this knowledge, we may better infer that if a user performs some activity on a location, then it is likely that she will also perform another activity. For example, when the users go to see a movie in some place, it is quite likely they will also have some foods/drinks there. One possible way to get such activity-activity correlation information is directly having some statistics over the activity occurrence in the GPS data; however, as the amount of available comments is few, we may not get reliable statistics. Therefore, we refer to the World Wide Web, which is a huge

knowledge source, to get such statistics. By organizing the data in a matrix form, we have an activity-activity matrix, with rows and columns both as activities. Each entry of the matrix denotes the correlation between a pair of activities.

### *Collaborative Location and Activity Recommendations*

In this module is the knowledge of location-activity matrix, location-feature matrix and activity-activity correlation matrix, we can train a recommender system. We propose a collaborative filtering model under the collective matrix factorization framework, and manage to fill the missing entries in the location-activity matrix. Based on the filled location-activity matrix, we will rank and retrieve the top k locations/activities for recommendations to the users who access our system by PCs/PDAs.

## CONCLUSIONS

This paper explain a recommendation system for personalized travel sequence in which recommendation is based on two types of social media data, travelogues written by users and users contributed photos on social media. This recommendation system considers the user interest with another attribute of users like time, season, and cost of travel. Using this social media data not only mining users point of interest but also the travel sequence of the point of interest with considering other attribute of user i.e. consumption capability of the user. For future work, we can use more type of data for mining user interest and can provide information for a recommendation like hotel information and transportation detail for the user for convenience tour planning.

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